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EXTENSION SERVICE CIRCULAR 68 NOVEMBER, 1927

SWEET CLOVER

EXCERPTS FROM 1926 REPORTS OF STATE AND COUNTY EXTENSION AGENTS

M. C. Wilson and O. S. Fisher

OFFICE OF EXPERIMENT STATIONS
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UNITED STATES DEPARTMENT OF AGRICULTURE
Extension Service.....C. W. WARBURTON *Director*
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EXPERIMENT STATION FILE

SWEET CLOVER

Excerpts from 1926 Annual Reports of State and County Extension Agents

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U. S. Department of Agriculture

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SWEET CLOVER*

Introduction

It has not been many years since sweet clover was considered a weed in most sections of the country. The attitude toward this plant has gradually changed until at the present time it is probably one of our most important and most popular legumes to be used in short rotations. It grows on almost all types of soils and under almost every climatic condition, although a large amount of available limestone is required for its proper growth. Reports indicate that it is grown in practically every State.

The principal uses of this crop are first, for temporary pasture in fields that are not to be taken out of a regular rotation for any considerable length of time; second, as a supplementary crop to be seeded in old bluegrass or native pastures; and third, as a crop for soil-improvement purposes.

After the young sweet-clover plants have grown a good root system the ability of this crop to grow during the hot, dry summer months and produce an abundance of feed with a minimum of moisture is probably what makes it of greatest importance not only to the farmer desiring to supplement his regular pasture with additional grass but to the man growing the crop for soil improvement. It is seldom that there is a failure in sweet clover if the land is abundantly supplied with lime and the crop given an opportunity to obtain a good stand before livestock is turned in on it for pasture.

Sweet clover seeds abundantly, making the seed supply plentiful and reasonable in price; it produces a large amount of growth quickly for feed or soil-improvement purposes; it apparently is not easily susceptiable to disease, and ti adapts itself to a wide range of soil and climatic conditions. These are some of the reasons sweet clover is accepted so universally by the farmer.

Excerpts

Colorado

During the spring of 1926 a sweet-clover campaign was conducted in cooperation with the Great Western Sugar Company. The object of the campaign was to get the farmers who grow grain under irrigation, to seed sweet clover with it. As a result more than 900 acres of small grain were seeded with sweet clover. Most of the farmers used the Biennial White variety, but a few used Hubam or Annual sweet clover. Some of the demonstrators plowed down the sweet clover for green manure; some cut it for hay; and others used it for pasture.

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*No attempt is made to cite all references to sweet clover in this circular. Only selected extracts showing typical methods employed and results obtained in a number of States are included. Owing to differences in terminology used in the various States and to other local conditions, the information contained herein should be reviewed by the State subject-matter specialist concerned before incorporating any part of it in the extension plans for the State.

This is the best method of utilization in obtaining the largest returns, not only from the sweet clover itself, but also from the beets the year following the sweet clover. However, it is known that the growing of sweet clover on land and utilizing it as a green-manure crop, pasture crop, or hay crop, will result in increasing the yield of the succeeding beet crop. On some depleted farms the resulting increase from plowing down one crop of sweet clover as green manure was 6 tons of beets per acre. - R. H. Felts, district agent, State Agricultural College of Colorado, Fort Collins.

To encourage the production of more livestock, particularly hogs and dairy cows, on the nonirrigated farms in eastern Colorado, and to approve the value of sweet clover in this diversified system of farming, a hog-cream-clover campaign was planned by a group from the extension service of the State Agricultural College of Colorado together with D. W. Thomas of the Denver Chamber of Commerce.

The cooperation of the Denver Union Stockyards, the Denver seed dealers' group, and the Creamery Manufacturers' Association was also obtained, and a campaign to encourage the production of more hogs, dairy cows, and protein feeds on dry-land farms was planned. It was arranged to visit some 30 towns in eastern Colorado with a portable exhibit and a group of speakers. At each town where meetings were planned, R. H. Felts, district agent, and D. W. Thomas made arrangements in advance with the local citizens for a place of meeting, for publicity, and such other things as would make for a better local reception. It was found that the portable exhibit was not going to be popular, so that part was dispensed with. Much publicity was given through news notes from the college direct to the editors in the towns covered. Circulars on legumes for nonirrigated conditions were printed. The Denver seed dealers' group made a special price on recleaned scarified yellow sweet clover at 11 cents per pound f.o.b. Denver. The dealers in the towns where meetings were held cooperated in handling this seed at a small profit, so that it cost the farmer 12 to 13 cents a pound in his own town, while the retail price was 13 to 16 cents per pound.

The campaign started at Bennett on March 8. All the meetings were handled on the following plan: A local chairman introduced the subject and explained the need for entering into the hog-cream-clover campaign in that community. Mr. Thomas was then introduced. He showed the reason for the interest of the chamber of commerce and the manufacturers concerned. He also brought out the possibilities of increasing dairy production in the dry-land section. R. W. Shafer, district agent, showed that Denver could use a million more hogs a year, and that Denver is a good market for Colorado growers, as the prices received there are usually somewhere close to Chicago prices, and the transportation costs to Denver are less than to Chicago. B. W. Fairbanks, animal husbandry specialist, showed the value of legume pastures for hogs, figuring on the basis of current local feed prices, 1 acre of sweet-clover pasture being worth $12 to $17. Waldo Kidder, agronomy specialist, explained the steps in growing sweet clover. At the end of the meeting Mr. Thomas explained the concession on seed prices made by the Denver dealers through the local seed dealers, and the demonstrators ordered their seed on contracts which the party carried with them.

A summary of the results of the campaign shows the following:

Number of meetings	30
Attendance at meetings	1,177
Acres signed on contract at meetings	1,323
Pounds of seed ordered	10,941
Total value of seed at 11 cents per pound	$1,203.51
Number of demonstrators	179

The campaign was followed by field visits and reports from the demonstrators in order to get sufficient data in each community as to the proper cultural methods and use of sweet clover under the various conditions.

Some 200 farmers, planting approximately 2,500 acres of sweet clover, have been obtained through the campaign. The results show that sweet clover can be grown successfully in the eastern part of Colorado, provided cultural methods are right. - Waldo Kidder, Agronomy Specialist, State Agricultural College of Colorado, Fort Collins.

Early in the spring, in cooperation with the First State Bank of Calhan, 300 sweet-clover bulletins were distributed among dry-land farmers in the Calhan, Rush, Yoder, Tructon, Edison, Ramah, Peyton, and Alta Vista communities. Letters from the extension office and the banker, calling attention to sweet clover and urging the farmers to give it a trial accompanied the bulletins. Newspaper articles on sweet clover were published. At farm meetings throughout the dry-land area and particularly at a series of meetings held by the Rock Island Railroad along their lines, attention was called to sweet clover, and 30 demonstrators were obtained.

The demonstrations involved 567 acres, and in practically every case sufficient stand was obtained to warrant leaving the field for next year. In many cases good stands were obtained, and some pasture furnished this year, together with promise for an excellent hay or seed crop next season. More interest in sweet clover has been awakened than at any other time, and the following, applicable to local conditions, have been determined: (1) Sweet clover can be grown here if seeded on firm, clean ground early in the spring or winter; (2) Yellow Blossom clover yields the finest quality of seed and should be planted, except in the higher altitude where it does not make sufficient growth; (3) it is advisable, usually, to make a light supplementary seeding at the end of the first year in order to create a stand of yearling plants at the end of the second year. After that the ground becomes well charged with seed and new plants start every year; and (4) sweet clover does best on the soils which need it most, or sandy soils. - J. C. Hale, county agent, Colorado Springs, El Paso County

Delaware

That interest is being shown in the growing of sweet clover was demonstrated on May 10, 1926, when 75 farmers from all sections of the county and State attended a field meeting on the farm of J. Harold Schabinger, to inspect the sweet clover, and to discuss its possibilities and advantages as a profitable

pasture and hay crop for Delaware soils. Mr. Schabinger has been growing sweet clover for the past three years with excellent results, and in his remarks to the visiting farmers he emphasized the importance of lime and seed inoculation as the outstanding factors in the successful culture of this crop. His field of 8 or 10 acres each year provides excellent pasture for his 24 head of dairy cows during the entire season from May 1 to late summer. - Russell E. Wilson, county agent, Dover, Kent County.

Idaho

Sweet clover and alfalfa were discussed at 16 meetings and demonstrations. Sweet clover has been advocated principally as a forage crop, but is slower to establish because of prejudice against it, and its tendency to heave out easier than alfalfa. The methods used in obtaining stands of sweet clover are: Fall plowing, treating with gypsum, inoculating the seed, broadcasting and rolling after seeding. Some farmers prefer to plant sweet clover first in order to inoculate the soil and increase the nitrogen content before planting alfalfa. A few are following the method used on some of the experiment station plots of mixing alfalfa and sweet clover and planting the same amount as if each were planted by itself, such as 10 pounds of alfalfa and 12 pounds of sweet clover. As it takes alfalfa about three years to produce its maximum crop, the sweet clover produces a fair crop and is gone before the alfalfa yields are heavy.

Stands of sweet clover have been obtained on 18 farms this year with a total of approximately 77 acres. The growth of this legume varied in different types of soil and under different moisture conditions. Most of the plants grew sufficiently to start pasturing about August 1, or yielded one light clipping of hay. - Walter F. Thomas, county agent, Sandpoint, Bonner County.

Illinois

During 1926 there were more than 10,000 acres of sweet clover in Clark County, and many demonstrations relative to the use of it have been established. Farmers who plowed under sweet clover obtained 75 bushels of corn per acre. The variety wheat plots which outyielded any other plots in southern Illinois were on land where sweet clover had been plowed under. One man obtained 15 bushels above the normal yield due to sweet clover. Wheat yields this year averaged from 30 to 40 bushels following sweet clover that had been plowed under in 1925.

By the use of a seed harvester, invented in this county, and combines furnished by a commercial dealer, between 2,500 and 3,000 bushels of sweet-clover seed were harvested in this county. Many farmers have already procured their seed for the 1927 season, at a price in all probability much below what the dealers will sell it for next year. - W. W. Merritt, county agent, Martinsville, Clark County.

For several years demonstrations have been conducted on many farms to show the value of sweet clover in soil building as well as for pasture and other purposes. At present there are approximately 25,000 acres in sweet clover, most of which is being used as a green-manure crop for corn. The various experiences of growers, based on the several years of sweet-clover demonstrations, can be summarized under the following:

(1) Sweet clover is the greatest crop to renovate blue-grass pasture.
(2) Sweet clover made 1½ tons of fine hay during the first year's growth.
(3) Sweet clover so enriched my land that I grew 85 bushels of corn per acre the past year.
(4) Sweet clover plowed under for corn in the spring increased the yield of corn at least 15 bushels per acre over land of the same kind not so treated.
(5) Sweet clover saved me from complete pasture failure in the summer, carrying my cows through a dry season in a high state of milk flow, whereas without it I would have been compelled to feed corn and hay. - B. W. Tillman, county agent, Belleville, St. Clair County.

Indiana

As sweet clover affords an abundant pasture for livestock during the dry summer months, it is rapidly growing in popularity. On farms where tests have been made, sweet clover has increased the carrying power three-fold. George Fultz of Washington Township pastured 12 head of dairy cattle, 15 hogs, and 6 sheep on 7 acres. J. D. Congleton of Franklin Township pastured 10 head of cows on 10 acres of sweet clover. He found that his pasture was not eaten down enough to furnish best results, as the clover seeded in the late summer and was worthless as pasture. He threshed 40 bushels of seed from this field.

W. W. Crim of Pierce Township harvested 40 bushels of seed from 5 acres of sweet clover. This demonstration, as well as two others of equal importance, would seem to indicate that in addition to being an excellent soil-improving and pasture crop, sweet clover is a valuable seed crop.

Much of the interest in sweet clover has been brought about by the 16 demonstrations carried on in six different townships of the county. Some of these plots run checks with lime applied, and no lime. They have been valuable in convincing the farmers as to the value of liming. - Earl S. Miles, county agent, Salem, Washington County.

Iowa

Although legumes have had an important place in the farm practices of Dallas County for years, there has been a decided increase in the interest in legumes this year. This interest has been stimulated largely by the fact that sweet clover and alfalfa are just recently being fully appreciated as a fertility as well as a feed crop.

The method used in carrying out this project was as follows:

(1) Through publicity and meetings to impress the importance and value of legumes, particularly of alfalfa and sweet-clover rotation. The newspaper and radio have been of valuable help in bringing this about. Also correspondence and personal contact with farmers have aided greatly to accomplish this end through encouraging the testing of soils where seeding is contemplated. The samples were tested in the office, on the farms, and at meetings.

(2) To encourage the use of limestone where needed.

(3) To continue carrying on limestone demonstrations on alfalfa and sweet clover. The sweet-clover tests with lime proved that lime is an important item in growing sweet clover on acid soils.

(4) To conduct tours to study legumes and the use of limestone and fertilizers.

(5) To hold sweet-clover meeting to study harvesting and successful growing of sweet clover. This meeting was held on the farm of N. C. Kinnick of Colfax Township. Mr. Kinnick has been the user of limestone for a number of years and one of the first to grow sweet clover in this county. He had some valuable information to offer at this meeting in addition to the harvesting of sweet clover. The machine used in this demonstration was a homemade harvester. One hundred attended the meeting.

(6) To procure legume seed at reasonable prices and to encourage the testing of seed for purity and germination. - H. E. Codlin, county agent, Adel, Dallas County.

Kansas

In the winter of 1924-25 the soils specialist, E. B. Wells, and crops specialist, L. E. Willoughby, held a series of lime and legume schools in Johnson County. Bert Rogers of Olathe invited them to his farm to plan a soil-improvement program for him. His soil was found to need lime before being seeded to a legume crop. Mr. Rogers wanted to grw red clover but was convinced that on soil like his, sweet clover offered greater possibilities.

Mr. Rogers decided to do everything necessary to obtain an economical stand of sweet clover. He also agreed to leave 1 acre untreated for a check plot The farm consisted of 80 acres, of which 74 were tillable. This allowed 73 acres to be treated with lime, and 1 acre to be left untreated.

The following is an account of the Bert Rogers sweet-clover project. Land rented to a tenant to be seeded to oats. Renter to sow clover with oats.

1925:

2 cars of limestone	$190
Hauling to farm	80
Spreading lime	50
Rent to spreader	20
Labor (boy)	10
Total liming cost	$350
Sweet-clover seed	140
Total cost of sweet clover and lime	$490
Owner's share of oats	300
Net cost of sweet clover	$190

1926:

Sweet clover was clipped and the clippings used for hay. A farmer clipped and bound seed crops for the sweet-clover hay - 40 tons.

Sale of seed	$2,750
Hauling cost	190
Threshing cost	330
Total cost	$ 520
Net value	2,250
Acre value of sweet clover	30.40

The State summary for the county agents' reports gives the following:

79,340 acres of sweet clover sown last spring.
58,001 making a stand.
3,347 farmers utilized sweet clover for pasture.
48,440 acres involved. - A. F. Turner, A. L. Clapp, G. W. Salisbury, and Frank O. Blecha, district agents, Kansas State Agricultural College, Manhattan.

Kentucky

One of the most successful demonstrations was on the farm of W. L. Robinson of Clarkson, who sowed 40 acres on frozen ground during March, using hulled sweet-clover seed at the rate of 10 pounds per acre with soil inoculation. This land was limed in the spring of 1925 and cultivated in corn.

On July 10, 27 steers averaging 710 pounds were turned in. In addition to the sweet-clover pasture, they were fed 1 pound of ear corn to the hundredweight, and they made an average daily gain of 3 pounds per head. - H. S.Patterson, county agent, Leitchfield, Grayson County.

A goal was set for 59 men to grow sweet clover. The result was that 80 sowed 780 acres, a large part of which was in mixtures in which sweet clover was the basis. Practically all of the sweet clover sown here is for pasture or for the reclamation of soils. Much of it is sown on lands that were heretofore considered as waste lands. Many farmers are seeding their marl beds in sweet clover. One farmer marled a portion of his field with marl that had sweet clover growing in it, and the rest of the field from a bed that did not have sweet clover in it. The field was seeded in a mixture in which sweet clover was added. The portion that was marled from the bed having sweet clover in it had approximately 20 times the sweet clover as compared with the other.

Sweet clover has proved to be an emergency crop for either wet or dry seasons. During the summer of 1925, when it was extremely dry and the pasture was short, the spring-sown sweet clover furnished a large amount of excellent pasture. The past season has been extremely wet; much of the soybeans and peas were ruined for hay. Some of the farmers mowed their sweet clover that had been sown the previous spring, making more than 1 ton of good hay to the acre. - J. H. Atkerson, county agent, Greensburg, Green County.

Louisiana

The use of sweet clover on the alluvial soils of Red River is one of the outstanding pieces of work of the district. The front lands of this particular belt are planted continuously to cotton on account of insect injury being less here than on the back lands. This system of cropping has depleted the available plant food, and in many respects a profitable crop can no longer be produced.

Three years ago seven or eight farmers in Natchitoches County were induced to try sweet clover as a winter cover crop. Several of them succeeded in getting the crop to grow and obtained marked increased yields from cotton following the clover. The next year something like 30,000 pounds of clover seed were planted in the county. The following year about 90,000 pounds of seed were brought into the county, but all of it was not planted. This last fall more than 40,000 pounds of fresh seed and the seed carried over were planted. It is estimated that from 3,000 to 5,000 acres of clover were planted in Natchitoches County this fall. - F. W. Spencer, district agent, Louisiana State University, Baton Rouge.

Maine

A number of men in Somerset County have seeded sweet clover, but probably Ansel Newton of Skowhegan has been the most successful.

In the spring of 1925, 600 pounds of acid phosphate and 2,500 pounds of lime per acre were applied. The plot was then seeded to sweet clover and a regular grass seed mixture. The crop grew to a good height and was estimated to yield about 2 tons of sweet clover per acre.

It took about five days to cure the crop this season. Although Mr. Newton is well satisfied with the growth and yield, he does not feel that it is good crop to be grown for hay. As a soil builder or possible a pasture it can not be excelled.

H. P. Jones of Portland obtained good results by allowing his sheep to run in a pasture seeded to the following mixture:

13 pounds of sweet clover.
4 pounds of alsike.
4 pounds of red clover.
1 pound timothy.

There was considerable sweet clover, and when the grass was fed down the sheep were turned out of this part of the field until it had a chance to start up again. - Gerald C. Dunn, county agent, Skowhegan, Somerset County.

Maryland

Sweet clover is getting more popular in Garrett County every year. It has been grown for hay, pasture, and green manure. Eight demonstrations were conducted this year - 5 for hay, 2 for pasture, and 1 to eradicate Canada thistle.

The last demonstration was conducted near Grantsville in a field which was covered with thistles. The field was first plowed shallow and harrowed thoroughly and sown heavily with sweet clover. A good stand was obtained and although the thistles were not completely eradicated, they were killed to a great extent. - W. Clayton Jester, county agent, Oakland, Garrett County.

Michigan

Sweet clover is becoming more and more popular as a pasture crop, a green manure crop, and for the production of seed. This year several farmers cut the crop with a binder and the results were satisfactory. I now feel justified in promoting this practice. In many instances the crop is grown chiefly for seed

production. Our farmers are becoming more proficient in handling sweet clover for seed. Some are purchasing scarifiers so they can put their seed in more salable shape. - John W. Sims, county agent, Caro, Tuscola County.

Minnesota

Sweet clover is rapidly becoming an important pasture crop on the heavy high-lime soils of southwestern, central, and northwestern Minnesota, but it is grown very little on the heavy low-lime soils of southeastern Minnesota and the sandy area in eastern Minnesota and north and west of the Twin Cities, and south of Duluth. On the two latter areas lime must be applied before sweet clover can be recommended.

The following is taken from a report from John Vacha of Elk River: "Thirty cows were pastured 6 days in May, 30 days in June, 20 days in July, and 25 days in August. In addition to the above seven horses were pastured on the sweet clover at night from June 21." The pasture began to dry up and deteriorate during September. The carrying capacity of this 13 acres of sweet-clover pasture on typical sandy soil of Sherburne County carried about 2-1/3 cows per acre from May 25 to September 1, and the common pastures were barely able to carry one cow on a starving ration. The season was so dry in May and June that the common pastures did not grow, but simply burned up. There were four or five other demonstrations in the same county, but not on so large an acreage.

One farmer in Sherburne County seeded sweet clover alone after June 16, on newly cleared land, prepared by plowing and covering in a rough manner. A good smooth job of seeding and covering was imporrible on account of the roots and stumps. The sweet clover made a remarkable growth. The above simply shows what should be done on thousands of acres of similar land in this region.

A farmer in Scott County obtained a successful stand of sweet clover seeded alone in June, on sandy land, that blows badly in places. - Ralph F. Crim, agronomy specialist, Department of Agriculture of the University of Minnesota, St. Paul.

Winfield Holmes reports that 5 acres of sweet clover used for night pasture for 34 head of Holsteins sufficiently demonstrated its value to him so that he will put in about 15 acres next season.

At Jean Duluth farm, W. C. Crosby the manager, reports that 11 acres were sown at the rate of 14 pounds per acre on land limed at the rate of 2 tons. August 1 was the date of seeding. On May 28, 26 Holstein cows and heifers were turned in this field. When visited by R. C. Crim, extension agronomist, and the county agent on August 16, the 2-year-old heifers were "rolling in fat" and the milking cows were in splendid shape. - S. Allen Aldrich, county agent, Carlton, Carlton County.

This fall 22 carloads of sweet-clover see have been shipped out of Kittson County, bringing the farmers a cash price of $100,000. The shipments included 11 carloads from Kennedy, 9 from Hallock, and 3 from Bronson and Lancaster.

Sweet clover is proving its value as a pasture crop, and besides it is being used extensively for hay. Many farmers have found they can make excellent hay from it and save most of the leaf by cutting with a binder. Others are using the side-delivery rake successfully in handling the crop.

Larger yields of wheat and flax are being obtained on sweet-clover land, many of these being more like the yields that used to be obtained in the early days. - M. A. Thorfinson, county agent, Hallock, Kittson County.

"One acre of sweet-clover pasture is equal to five of native."

The above is the statement of several farmers who had sweet-clover pasture this year, which was an exceptionally dry season, and gave the 1925 seeding a most severe test. During the dry spell sweet clover was about the only kind of pasture that was any good at all.

The above results were noted on the sweet-clover tour on June 16 in the vicinity of Elk River. The first place visited on the tour was Robbins Farm, south of Elk River, at which place sweet clover was being used for both cow and hog pasture and was furnishing an abundance of feed. Not only had the sweet clover been pastured this summer, but also last fall after the nurse crop of oats had been harvested. Mr. Robbins also had a fine field of sweet clover which was being cut for hay.

John Vacha had pastured 30 head of cattle on 14 acres of sweet clover for over one month, and at the time of the tour the cattle had an abundance of feed in spite of no rain in the spring. Mr. Vacha said he would have had to sell off the cows if he had not had the sweet-clover pasture.

The farm bureau pooled orders for 10,000 pounds of sweet-clover seed at a considerable saving to the farmers. - Raymond Aune, county agent, Zimmerman, Sherburne County.

Missouri

Sweet-clover pasture for dairy cows is to the dairyman's feed bill what the home garden is to the farmer's grocery bill. M. H. Uphaus of Concordia, found that he could reduce the feed bill and increase the production of milk by growing sweet clover for pasture.

The use of sweet clover for pasture brought about a higher efficiency in his herd which is evident from the cow-testing association records. During 1925 Mr. Uphaus' herd of 29 Holstein cows averaged 30.6 pounds more butterfat than during 1924. The profit from his herd was $513.59 more than the previous year.

Mr. Uphaus says: "I decided to give sweet-clover pasture a trial in the fall of 1924. My farm papers and the agricultural colleges had so many good things to say for sweet-clover pasture that I decided to find out what it would do for me. I consulted the county agent about producing this crop, and upon his recommendation I had my soil tested. The test showed my soil was sour and that 2½ tons of ground limestone per acre was needed before I could grow sweet clover successfully.

"I bought some crushed limestone and limed a 12-acre field. I limed this land in the fall of 1924, and the following spring seeded oats and sweet clover on it. The land was plowed in October before the lime was spread. This gave the lime a better chance to work into the soil. I seeded this field to oats and sweet clover about March 10. The seed bed was solid and firm. Twenty pounds of inoculated, scarified seed was sown to the acre with the oats. I had a good yield from my oats - 60 bushels per acre. My clover was handicapped by the good oat crop, however, and a dry period following the oat harvest made the clover look as though it would not stand all these reverses. In spite of these unfavorable conditions the crop was far enough to pasture by September.....

"I turned 40 cows on this 12 acres of sweet clover on September 1. This pasture saved from feeding roughage for six weeks from the time that I had fed roughage in former years, when I depended on blue-grass pasture. Although this was the first year for my sweet clover, the cow-testing association records show that my feed bill was $127.40 less in 1925 than in 1924, when I was using blue-grass pasture. In view of the fact that my cows had access to this sweet-clover pasture only a short time last year. I am expecting to reduce my feed bill considerably more this year, and also increase the production of my herd. I do not feel that I can do without sweet-clover pasture for my dairy cows." - C. E. Carter, field crops specialist, College of Agriculture, University of Missouri, Columbia.

A sweet-clover demonstration plot on the farm of J. O. Kindred of Curryville community was seeded in the spring of 1925 on Butnam silt loam. Twenty pounds of scarified White Blosson seed, 200 pounds of acid phosphate, 2 tons of lime per acre, and good inoculation were used. The past winter an additional ton of lime per acre was added.

The demonstration included 9.5 acres and was pastured from April 15th to July 1st with 7 cows, 5 horses, and 60 hogs. The field was plowed this fall for a green-manure crop for corn in 1927.

The cost on this field was: $6 per acre for lime, $2.50 per acre for fertilizer, and $1.90 per acre for seed, or a total of $10.90

There was no clover on the check strip 16 feet wide running through the field. This check was not treated with lime or fertilizer.

In 1926, 17,625 pounds of sweet clover were used in the county, as compared with 7,075 pounds used in 1925; and 130⅕ bushels of inoculation was ordered in 1926 as compared to 47½ pounds last year. - C. W. Campbell, county agent, Bowling Green, Pike County.

Montana

At the time of the dairy tour this summer, J. O. Tretsven, dairy specialist, and the county agent visited the W. F. Jellison farm in LaSalle community, and were much impressed with the wonderful progress that Mr. Jellison has made in developing sweet-clover pasture among the stumps.

Mr. Jellison's experience dates back to 1921. About 60 acres were prepared that year by burning off trash and windfalls, followed by seeding with a small cyclone seeder at the rate of 4 pounds per acre. In February and March, 1922, about 60 acres more were seeded, using sweet clover and timothy at the rate of 4 pounds per acre. The seed was scattered throughout the timber pasture where small burnt areas made seeding possible.

By the summer of 1923 the sweet clover made considerable pasture and was from 3 feet to 4 feet high in protected places under tree tops where the cattle could not reach it.

The sweet clover has increased and has been pastured each year over a period of six to seven months. Mr. Jellison estimates that there are 5,000 acres of land in the LaSalle, Helena Flats, and Pine Grove districts that could be cleaned up for pasture. The past year was unusually dry and at the time of the visit of Mr. Tretsven and the county agent about 50 head of stock were in the pasture, and the sweet clover seemed in excellent condition. - R. B. McKee, county agent, Kalispell, Flathead County.

The growing of more sweet clover, especially on nonirrigated ranches, has been advocated through the extension office for the past nine years. However, it has been only within the last three or four years that the farmers have planted a large acreage and become sold to the idea that sweet clover is one of the best dry-land pasture crops grown.

Early in 1926 a sweet-clover campaign was carried on in eight communities for the purpose of interesting more farmers in planting sweet clover. Circular letters were sent out to farmers, publicity was given to the county papers, and posters were displayed in different business houses and elevators in the various towns. It is estimated that an increase of at least 5,000 acres of sweet clover resulted from this educational campaign. Farmers who have grown sweet clover for several years realized considerable money from their seed crop this season. A carload of sweet-clover seed was pooled during November and sold through one of the local elevators. - W. H. Jones, county agent, Columbus, Stillwater County.

New Jersey

A typical county program on sweet clover provides for one or more field meetings at successful sweet-clover farms, working with 5 or 10 men to guide them properly in establishing the crop, and publishing a certain number of news articles at timely intervals on the subject of sweet clover.

Some good extension work was done on this crop during the past year. Eleven counties listed sweet clover as a part of their crops' program for 1926. In most of these counties the crop has been emphasized primarily as pasture for dairy cows, with soil improvement as a secondary consideration.

Two successful demonstrations with sweet clover were established in Gloucester county. One of them, at Shiloh, was sown in the spring of 1925 on 3 acres. On July 7, 1925, the farmer turned in 10 head of dairy cattle and they stayed on until fall; the only other pasture the animals used was a 2-acre plot of grass near the barn. In the spring of 1926, he turned on nine cows when the sweet clover was 1 foot high, and kept them on until August 1. At that time he turned the cows on a new seeding of sweet clover made in the spring of 1926, which proved to be a successful stand. - H. R. Cox, agronomy specialist, College of Agriculture and Mechanic Arts, State University of New Jersey, New Brunswick.

North Dakota

Sweet clover when used for pasture is the outstanding forage crop in the county. It will carry more stock per acre than any other crop. Although there has been some trouble from bloat, particularly in the early summer and late fall when the young plants have a great deal of sap in them, the loss is small.

The following farmers report the carrying capacity of sweet-clover pasture:

J. F. Kippen of Hamilton reports having 50 acres of sweet-clover pasture on which he had 35 head of Shorthorn cattle, 90 ewes, 100 lambs, and 10 work horses.

Albert Bates reports having 140 acres in clover and 20 in weeds, on which he turned 700 sheep on June 22. During that time he harvested 100 tons of hay and 30 acres of seed, which was an excellent stand. The clover where hay was cut was about a foot high in September and more than the sheep could eat.

D. C. McIntosh of St. Thomas reports having 80 acres of sweet clover in pasture, on which he had 75 head of cattle, 80 sheep from the first of May, and 20 horses nearly all the time until harvest.

Barney Such of St. Thomas reports that about two head of cattle per acre would hold the clover to good pasture provided it were a good stand. - E. G. Parizek, county agent, Cavalier, Pembina County.

From Lewis Hagen, Pleasant Lake:

"My experience with sweet clover has been with pasture and hay, as I have never cut any for seed. I find that I can always have my stock in the best condition if I have plenty of sweet clover for pasture and hay. Cows give more milk, richer milk, and milk for a longer period before going dry. I cut sweet clover for hay just before it starts to bloom, and rake and cover it just as soon as the rake will pick it up, leaving it in the cock until it has cured.

"This fall I sold several head of cattle, and figure that they netted me $8 to $10 more per head because they had been fattened on sweet-clover pasture. I never had better cattle to market."

An advertising campaign for increasing the seeding of sweet clover was put on in the county last spring. News articles were written on the value of the crop, and letters were sent to all banks in the county and to prominent farmers, enlisting their assistance, and it is known that there was a marked increase in the acreage sown, but no figures are available on the results. - H. R. Danielson, county agent, Rugby, Pierce County.

Ohio

Sweet clover is the base around which we have built our soil-improvement program in Montgomery County. It has been pushed and its virtues emphasized in every possible way for the last four years. At the present time we are growing about 25,000 acres.

We are emphasizing its use in three different ways. First, we advocate that it be planted in the spring, either with wheat or oats, pastured lightly during late summer and fall and plowed under the next spring for corn. Second, it should be planted in the spring in oats or wheat, the stubble pastured lightly in the fall, and allowed to remain on the soil the entire next year as pasture. In this case we advocate that enough livestock be put on it to eat it down so that there will be little dry stubble to plow under the following spring. This practice fits in well with the dairy farmer who practices a three-year rotation. Third, we advocate that sweet clover be planted in corn at the last cultivation in fields where farmers do not intend to follow the corn with wheat, and where they are going to hog off the corn to turn the sheep in the cornfield. In this way they have a two-crop rotation, putting the land in corn each year. We have had a great spread of practice in that this year, about 2,000 acres of sweet clover being planted in corn.

It is easy to see that farmers were not having the degree of success with sweet clover they should have had, so our efforts this year have been along cultural methods.

We have had a wide variation in time of planting sweet clover. Some planted early in February in wheat, and others planted at different times. It has been our observation that much of the earlier planting was badly injured by severe freezing, following a warm spell when the seed sprouted. Also we observed that seed sown on top of the ground is often badly acattered due to heavy rain.

We now advocate a late planting of all clovers at a time generally from March 15 to April 15, when the ground can be lightly worked where it is sown in wheat. This is done best with a disk wheat drill allowing the seed to go out in front of the shoes. Others do it by following the seeding with a spike-tooth harrow, and some go a step further and roll it with a corrugated roller. We have further observed that this sort of seeding of sweet clover improves the wheat field.

We had 70 demonstrations in this method of planting this year. I believe another year's work on this method will make it a general practice. All our demonstrations were generally better stands than those planted earlier. - O. L. Cunningham, county agent, Dayton, Montgomery County.

Oklahoma

Five demonstrations in growing sweet clover, first for soil building, and second for hay and pasture, were planned and completed for the year. Seventy-three acres were prepared by fall and winter plowing, harrowing, and disking, and the seed broadcast at the rate of 18 to 20 pounds per acre, using unhulled seed. On three of these demonstrations with 48 acres, oats were sown at the rate of 1 bushel per acre as a nurse crop. Tests of the soil from the several fields had already been made to determine if too much acidity obtained, and on finding little or no acidity, lime was advised on account of the excessive cost.

In each of these demonstrations excellent growth of sweet clover was obtained with good stands. After pasturing throughout the fall, the fields stood from 6 to 15 inches in fine sweet clover at the time of killing frost. These farmers are highly pleased with this crop, and the demonstrations were visited by approximately 300 farmers during the year. The average estimated growth of pasture per acre on the demonstrations was 1 ton of cured hay. However, no part of any demonstration was harvested. - J. W. Guin, county agent, Chandler, Lincoln County.

Eight demonstrations in growing sweet clover were conducted in 1926. These demonstrations have shown that sweet clover has a definite value as a pasture crop and soil builder in this county.

Bob Vincent, west of Stillwater, planted 14 acres of sweet clover on March 1. He obtained an excellent stand and pastured five head of cattle on this field from June 15 to November 1.

A number of demonstrations in methods of getting a stand of sweet clover have been conducted. John Courtright of Perkins obtained an excellent stand on 7 acres of cotton ground by disking it lightly on March 15, and sowing it immediately. He pastured three cows and four horses on this field from July 1 to the present time. This crop suffered somewhat during the summer, but still had a good stand in the fall. - W. J. Green, county agent, Stillwater, Payne County.

Utah

County Agent Peterson of Uintah County says: "We have several demonstrations on the carrying capacity of sweet-clover pastures. Mr. Bingham had 3 acres of white sweet clover, second year's growth. He began pasturing this on May 29 with 18 head of milk cows. The cows had no other green pasture from this time until late in September, when his crops were removed from other fields. The cows were given what dry hay they would eat at night, but received all their pasturage from the 3 acres of sweet clover, and it was still green and about 16 inches high when he took them off in the fall. Mr. Bingham is an old dairyman in this section. He declares that his cows have done better this year than ever, and that the 3 acres of sweet clover have carried at least three times as many cows as any pasture of like size he has ever tried."

Forty-one cooperators have reported on sweet clover for pasture purposes. The sweet clover was planted either this year or last, and in every instance the reports have been favorable. One cooperator had 5 acres on which 21 cows were put on May 15. These cows were pastured here during the day until August 1, when they were turned into an alfalfa field for a week until the sweet clover got a start after it had been cut. The cows were fed some hay at night. The best of them were fed a little grain and silage, but this man reported that sweet clover furnished more feed than any other forage crop. This was the second year for this sweet-clover field.

We had one other cooperator who pastured the second year's growth. He maintained eight head of cows on 2½ acres from April 20 to August 1, when he took them off to permit the clover to go to seed. From the reports turned in it looks as if sweet clover furnishes about twice as much feed as mixed grass will furnish and produces more milk. In 1925 we had 9 cooperators, and in 1926 41 who reported. - R. L. Wrigley, county agent, Logan, Cache County.

Wisconsin

The object of the sweet-clover project was to demonstrate to the farmers that as a pasture crop for dairy cattle sweet clover is more valuable than bluegrass or other common pasture. The goal was one demonstration in each township.

After a series of town hall and schoolhouse meetings the previous year, explaining the advantages of this crop for pasture, some 20 cooperators agreed to sow sweet clover trial plots in the spring of 1925. Fifteen of these seeded as many demonstration plots as were actually in pasture this season.

Publicity was given in local papers during the winter and early spring. The 15 demonstration plots were visited more or less irregularly during the spring and summer, not only to observe results, but also to help the owners to use them in the best manner known. Some additional seedings were also observed from time to time.

Near the close of the summer two sweet-clover pasture tours were conducted to give the farmers an opportunity to visit some of these plots. One of these tours took in part of the northern section of the county, and the other the southern section. From 8 to 10 pastures were visited on each tour. On account of the busy season and the bad weather, only 25 farmers went on the tours.

Although it is too early to measure the results of our sweet-clover pasture work of the last few years, and it is difficult to devise any kind of a satisfactory measure of this work, the crop statistics gathered each year by the assessors give us some idea of how generally the growing of sweet clover is becoming an adopted practice. A total of 1,821 acres have been planted in the county.

The following conclusions were drawn from this year's work on the project:

(1) That swweet clover will give more feed per acre and will support more cows than any other pasture. This pasture will support from one to two head per acre.

(2) That sweet clover seems to be relatively safe as far as bloating cattle is concerned.

(3) Sweet-clover pasture gives the greatest amount of feed and lasts the longest if not pastured too close.

(4) A good practice in getting the most out of sweet-clover pasture is to have some other pasture on which the cattle can be turned part of the time so that the height of growth can be properly maintained.

(5) The rate of seeding and thickness of stand is an important factor in the carrying capacity of sweet-clover pasture. A good thick stand and heavy growth may give twice the pasturage that a thin stand chewed down close gives. - G. A. Sell, county agent, Oshkosh, Winnebago County.

Wyoming

Club work has proved to be an important factor in introducing better crops and livestock on the farm. To the dairy-calf club of Star Valley should go the credit for demonstrating the value of sweet clover as a pasture for dairy cows of that section. Until recently sweet clover has been sonsidered a weed by the dairy farmer in Star Valley, and has never been allowed to grow in that section. During the past two years 18 plots of 1 acre each have been seeded by calf-club members, under the direction of the county agent, to furnish pasture for their stock. Those pastures have proved successful, and the adult farmers have thereby become convinced that sweet clover has an important place among the crops of that valley, and as a result 200 acres have been seeded this year. - Frank P. Lane, county agent leader, College of Agriculture, University of Wyoming, Laramie.